

Title (en)

Cascaded fuel cell stacks for fast start-up and anode coking control

Title (de)

Kaskadisch angeordnete Brennstoffzellenstapel für schnelle Inbetriebnahme und Anodenverkokungsregelung

Title (fr)

Assemblage de piles à combustible en cascade pour le démarrage rapide et contrôle de la cokéfaction de l'anode

Publication

EP 1507302 A2 20050216 (EN)

Application

EP 04077084 A 20040719

Priority

US 64074303 A 20030814

Abstract (en)

A solid-oxide fuel cell system (10) having a relatively large primary fuel cell sub-assembly (12) for steady-state operation and a relatively small secondary fuel cell sub-assembly (26) which is rapidly heatable to a threshold operating temperature to a) produce usable power in a short time period, b) cascade a hot exhaust (42) into the primary fuel cell sub-assembly (12) to assist in preheating thereof, and c) provide steam (41) into the primary fuel cell sub-assembly (12) to prevent coking of the anodes thereof. As the primary sub-assembly (12) reaches its threshold temperature, it too begins to generate electricity and continues to self-heat and to be heated by the secondary sub-assembly (26). Preferably, the secondary sub-assembly (26) continues to provide electricity in complement with the primary sub-assembly (12) until the primary sub-assembly (12) reaches full power, at which time the secondary sub-assembly (26) may be shut down or switched to standby status for fuel efficiency, as desired.

IPC 1-7

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IPC 8 full level

B60L 11/18 (2006.01); **H01M 8/02** (2006.01); **H01M 8/04** (2006.01); **H01M 8/24** (2006.01)

CPC (source: EP US)

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Cited by

DE102008022581A1; EP1942544A1; EP3306718A4; CN107851820A; JPWO2017017786A1; US10686204B2; US10374241B2; WO2017017786A1; US10177394B2; US10249894B2

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